

# IPH-90 IP Phone

## User's Guide

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6IPH90....01

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# 1

## ***Introduction***

The IPH-90 IP Phone is a revolutionary telecommunications device that enables you and your calling parties to talk to each other through the Internet. The IPH-90 IP Phone affords those who call international or long distance frequently the abilities to bypass long distance carriers and to save dramatically on their long distance phone bills.

The IPH-90 IP Phone resembles a standard telephone set in that the quality of your conversations is not compromised by a computer that uses merely a sound card, a microphone, and speakers. To converse over the Internet, all you need is simply a IPH-90 IP Phone (or any other D-Link IP phone) at each end of an ISP connection.

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## **Features**

### ***IP Phone***

- ◆ The IP Phone operates as an Internet IP phone
- ◆ Compliant to MGCP 1.0 and NCS 1.0
- ◆ Connects directly to 10BASE-T Ethernet
- ◆ DHCP client or static IP addressing
- ◆ Large LCD panel (2 lines x 20 characters)
- ◆ Configure through LCD-driven menu prompts
- ◆ Integral dial pad built into the telephone set base unit
- ◆ Out of band DTMF tone transmission
- ◆ Visual Status Indicators
- ◆ Communication interface: RJ-45 for Ethernet
- ◆ Communications protocol: TCP/IP, UDP
- ◆ Voice compression: Complies with G.723.1
- ◆ User-adjustable volume control

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## **Unpacking**

Open the shipping carton and carefully remove all items. In addition to this User's Guide, ascertain that you have:

- ◆ IP Phone
- ◆ Handset cord
- ◆ Ethernet Cable (RJ-45)
- ◆ Power Adapter (9VAC at 1000mA)

If any item is found missing or damaged, please contact your local reseller.

## Operation Support Requirements

- ◆ Dedicated connection to the Internet (via ISP)
- ◆ Local power outlet

## IP Phone Displays and Functions

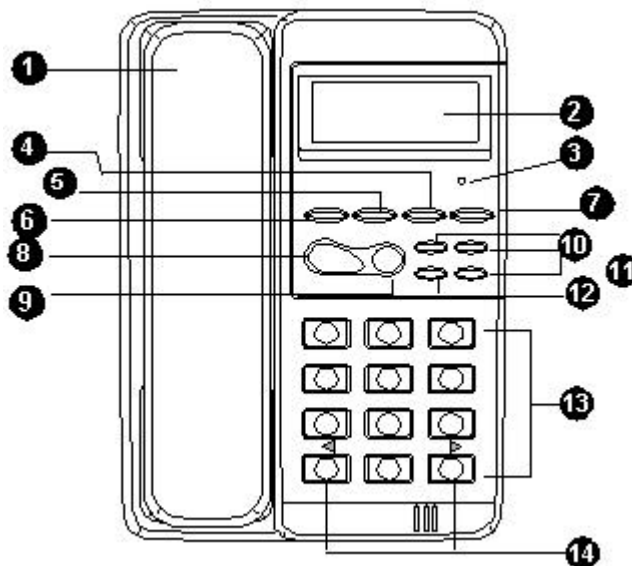


*Figure 1 Displays and Functions*

|  |                |                                                                                                                                   |
|--|----------------|-----------------------------------------------------------------------------------------------------------------------------------|
|  | HANDSET        | Contains earphone and microphone.                                                                                                 |
|  | LCD Screen     | Screen panel presents on-line messages and configuration settings.                                                                |
|  | READY light    | ON when calls can be made. BLINKING while registering with server.                                                                |
|  | MENU           | Tailor communications options for your account.                                                                                   |
|  | Free Call      | N/A.                                                                                                                              |
|  | INFO           | This allows you to view your account data, purchase additional time, or automatically call Technical Support or Customer Service. |
|  | SET            | Used to store, or “save”, changes when programming the phone.                                                                     |
|  | SPEAKER        | Allows for Hands-Free dialing or use as on-hook/off-hook switch with attached headset.                                            |
|  | REDIAL         | Dials the last number you called.                                                                                                 |
|  | FLASH          | Used to go flash hook or switch among multiple calls..                                                                            |
|  | VOLUME UP/DOWN | Increase or decrease listening volume during a call. Also used during configuring for moving up or down menu choices.             |
|  | HOLD           | Used to place the other person on hold.                                                                                           |
|  | DIALPAD        | 0,1,2,3,4,5,6,7,8,9,*, #.                                                                                                         |

|  |                 |                                                             |
|--|-----------------|-------------------------------------------------------------|
|  | LEFT &<br>RIGHT | Allows you to move left or right during configuration mode. |
|--|-----------------|-------------------------------------------------------------|

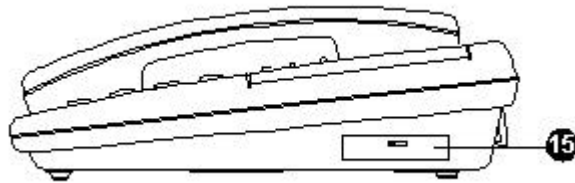


*Figure 2 Handset Controls*

|  |                  |                                                              |
|--|------------------|--------------------------------------------------------------|
|  | RINGER<br>VOLUME | Adjusts volume of the ring on incoming calls (low, med, hi). |
|--|------------------|--------------------------------------------------------------|

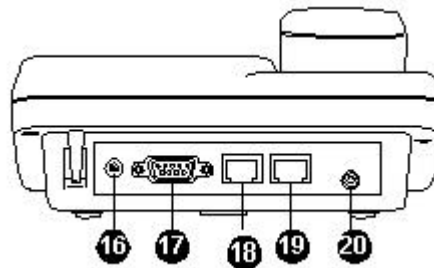


*Figure 3 Connectors*

|  |                 |                                                                 |
|--|-----------------|-----------------------------------------------------------------|
|  | POWER           | Adapter receptacle.                                             |
|  | CMD PORT        | Factory use only.                                               |
|  | ETHERNET<br>IN  | 10BASE-T LAN connection to “always on” ISP Internet connection. |
|  | ETHERNET<br>OUT | 10BASE-T LAN connection to PC, hub, or other Ethernet device.   |
|  | HEADSET         | Allows you to connect a 2.5mm hands-free headset.               |

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## ***Installation and Configuration***

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### **Installation Procedures**

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The following are steps to install and power on your IPH-90 IP Phone.

- 1) Plug the RJ-45 Ethernet cable into the “LAN” jack.
- 2) Plug the AC power adapter into the appropriate wall outlet.
- 3) Plug the Power Adapter Plug into the “Power” jack (AC 9V/1A). Proper execution of this step is vital to the functioning of the IPX. Without a power supply, the IPX can neither generate rings nor link to your Internet connection.
- 4) Within approximately 15 seconds, the IP LED should stay on. If it continues to blink, call your IPH-90 sales agent.

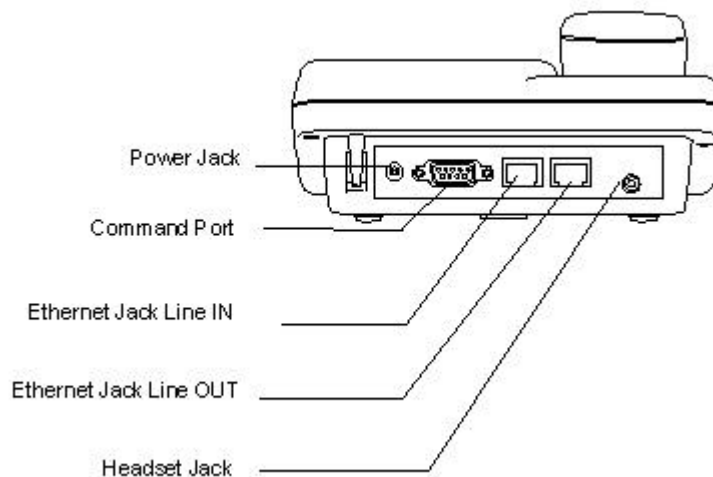


*Figure 4 Installation Connections*

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### **Your ISP Account**

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The IP Phone requires an IP address, which can be either static or dynamic (obtained through DHCP). If you have a problem connecting to your ISP, please verify that they issue “Dynamic IPs” upon connection.

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### **Call Manager Configuration**

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An IP Phone acts as an endpoint in MGCP. A call manager or call agent is needed to manage and control the calls among IP Phones. The IP Phone is able to talk to Clarent Call Manager 1.0. The configuration of this call manager is described as follows.

#### ***Clarent Call Manager 1.0***

If your IP Phone is connected to Clarent Call Manager 1.0, please use Clarent Assist 3.0 to configure your IP Phone in Clarent Call Manager. The configuration of the IP Phone in Clarent Call Manager involves:

## 1. Add subscriber

Please enter the First Name, Last Name, the Units, the PIN, and the Service Type of the new subscriber, as shown in Figure 5.

The screenshot shows the 'Add Subscriber' window in Clarent Assist 3.0. The window has a blue header bar with the Clarent logo on the left and a 'MENU' button on the right. The main area contains a form with the following fields and controls:

- First Name \***: Text field with 'Well' entered.
- Last Name \***: Text field with 'Smith' entered.
- Units \***: Text field with '1000.0' entered.
- Pin \***: Text field with '98625560042' entered.
- Domain**: Text field.
- Password**: Text field.
- Email Address**: Text field.
- Home Address**: Text field.
- City**: Text field.
- State**: Text field.
- Zip**: Text field.
- Country**: Text field.
- Group No**: Text field.
- Service Class**: Dropdown menu with '(null)' selected.
- Credit Limit**: Text field with '0.0' entered.
- Domain Access**: Dropdown menu with '(null)' selected.
- Service Type**: Dropdown menu with 'Y-Normal User Account' selected.
- Expiration Date**: Date picker with Month '12', Day '31', and Year '2004'. A 'Set Date' button is next to it.
- Suspend Status**: Dropdown menu with '(null)' selected.
- Hour**: Text field with '0' entered.
- Minute**: Text field with '0' entered.
- Second**: Text field with '0' entered.
- Account Code Privilege**: Dropdown menu with '(null)' selected.

At the bottom of the window, there are several buttons: 'Call Targets', 'Endpoints', 'MGCP Device', 'H323 Device', 'Paste', 'Save', and 'Back to View Screen'.

Figure 5 Add Subscriber window in Clarent Assist 3.0

## 2. Add MGCP Devices

After pressing the “Save” button, the “MGCP Device” button is enabled. You can then add MGCP Device information for this subscriber. Please enter the country code, city code, and phone number of the MGCP device (IP Phone). Select the package used by the device (IP Phone). Also, please enter the Endpoint ID, the IP address, and the international and domestic prefixes of the MGCP device (IP Phone). The Endpoint ID of the IP Phone is “aaln/1@gwSERIAL\_NUMBER”, where SERIAL\_NUMBER is the serial number of the IP Phone. For example, the Endpoint ID of an IP Phone with serial number 52200042 is “aaln/1@gw52200042”.

**Note:** The serial number of the IP Phone is located in two places: on the outside of the carton the device is packed in and on a sticker affixed to the bottom of the device.

**Add New MGCP Terminal with Call Target**

**Subscriber**

First Name: John  
Last Name: Smith  
PIN: 88635550042

**Call Target**

Country Code: 886  
City Code: 3  
Phone Number: 5550042

**Packages**

Associated Packages: standard  
Update Features

**Endpoint Related Information**

Endpoint ID: ashv1@gw52200042  
Phone Number: 5550042  
Call Control Name: CM  
IP Address: 202.39.222.42  
International Prefix: 002  
City Code: 3  
Profile Name: CPE  
Domestic Prefix: 0  
Country Code: 886

Save  
Go Back to Subscriber Screen

Figure 6 Add MGCP Device window in Clarent Assist 3.0

## IP Phone Configuration

This section describes how to configure the IPH-90. Before you attempt to make a call with your IP Phone, you have to prepare it by defining several configuration parameters in advance. There are several possible data entry screens scrolling under the MENU key.

### Connecting the IPH-90 using the LCD Panel

After turning on the power, the LCD panel will soon display “IPH-90 Check System”. The display message will change to “IPH-90 Ready for call” if the phone is ready to make calls. Please press the **MENU** key to bring up Password Menu. To configure the phone, one should enter the password and then press the **SET** key. After a successful password authentication, the subsequent Setup Menu will be displayed on the LCD panel upon pressing the **MENU** key, as shown in the following figure.

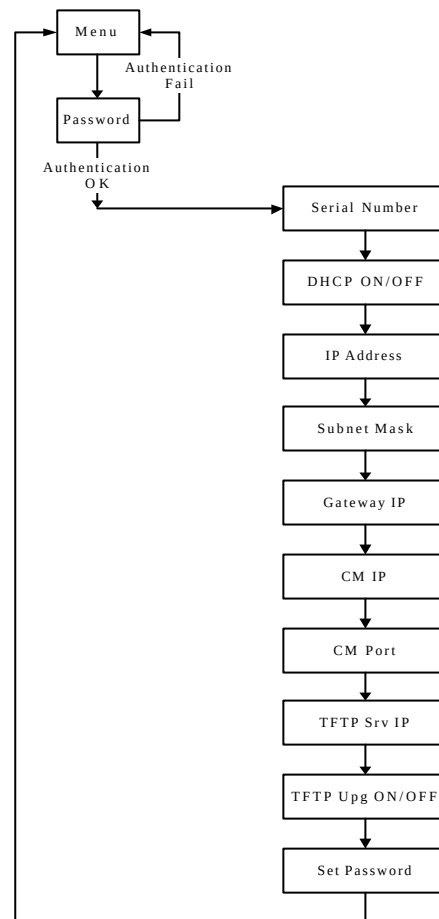


Figure 7 Setup Menu

**(0) Serial Number**

This field shows the serial number of the purchased DPH-90. This field is unchangeable. Press the **MENU** key to step to the next field.

**(1) DHCP OFF**

The default setting is OFF. You can use the “◀” arrows to step to **DHCP ON**, then press the **SET** key to save the change. If you turn on DHCP setting, it will automatically configure the IP Address, Subnet Mask and Gateway IP fields. Press the **MENU** key to step to the next field.

**(2) IP Address (DHCP OFF)**

Enter a four-byte (decimal) IP address that is assigned to your DPH-90. Each byte of the IP address is separated with a “dot” (two presses of the “0” key). Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(3) **Subnet Mask (DHCP OFF)**

Enter a four-byte (decimal) subnet mask. Each byte is separated with a “dot” (two presses of the “0” key). Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(4) **Gateway IP (DHCP OFF)**

Enter a four-byte (decimal) gateway IP address. Each byte is separated with a “dot” (two presses of the “0” key). Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(5) **5A. CM1 IP**

Enter a four-byte (decimal) Call Manager IP address. Each byte is separated with a “dot” (two presses of the “0” key). Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(6) **5A. CM1 port**

Enter Call Manager port number, for example, 2427 or 2727. Please refer to your call manager user guide for this port setting. Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(7) **5B. CM2 IP**

Enter a four-byte (decimal) Call Manager IP address. Each byte is separated with a “dot” (two presses of the “0” key). Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(8) **5B. CM2 port**

Enter Call Manager port number, for example, 2427 or 2727. Please refer to your call manager user guide for this port setting. Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(9) **TFTP SRU IP**

Enter a four-byte (decimal) TFTP Server IP address. Each byte is separated with a "dot" (two presses of the "0" key). Please refer to your call manager user guide for this TFTP server IP address setting. Press the **SET** key to save the setting and the press the **MENU** key to step to the next field.



(10) **TFTP UPG OFF**

Press the **SET** key to enable the remote upgrade via TFTP. After downloading the new codes from the specified TFTP server, the system will set the TFTP upgrade flags back to OFF.



(11) **Set Password**

The length of the password of EEPROM data configuration must not exceed a maximum of fifteen characters. Press **SET** key to save the setting and press the **MENU** key to step back to the **MAIN MENU**.



## Connecting the IPH-90 using a Web Browser

To configure the IPH-90 by a Web browser, follow these steps:

1. Open a Web browser. Type the IP address of the IPH-90. The default IP is 10.10.10.10.

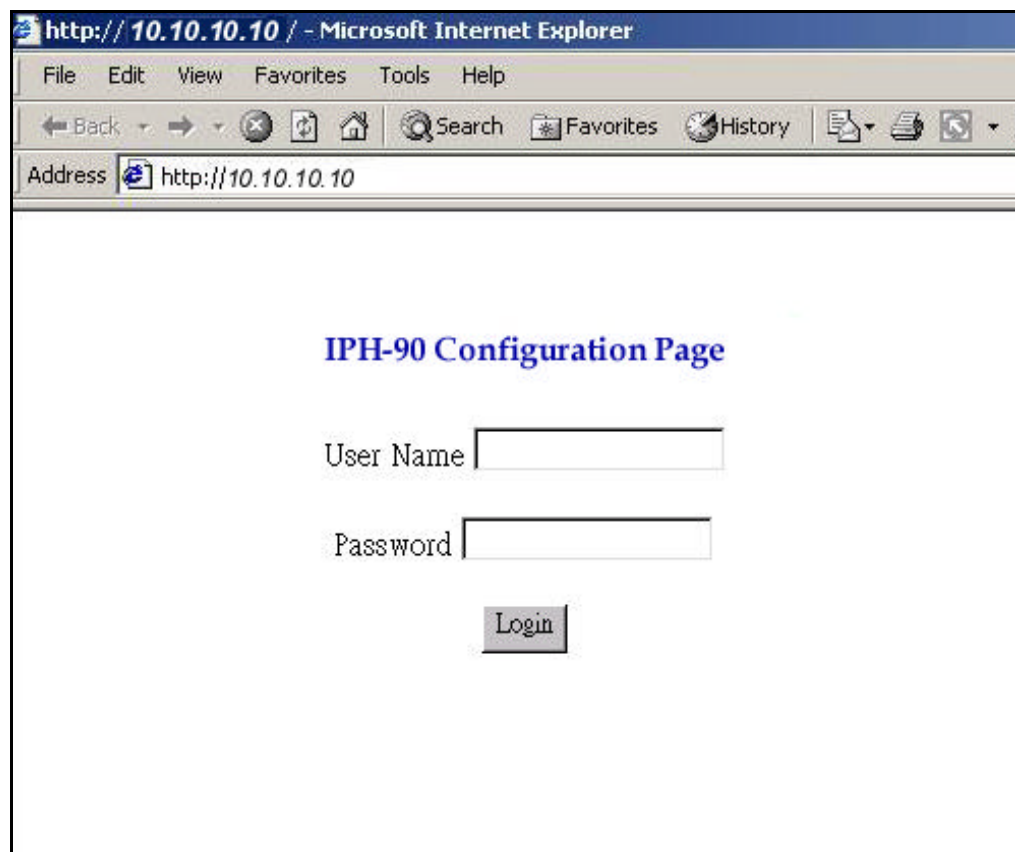


*Figure 8 IPH-90 Web Configuration (1)*

2. Type the User Name and Password in the fields displayed in the window above.

The User Name is the serial number on the IPH-90. No Password is initially required.

3. Enter or change the configuration values (see Figure 9).

SN# 52200139 (v1.29)

**Network Parameters**

☐ DHCP  
☒ Static IP

My IP 
 Gateway IP 
 Subnet Mask

**Call Manager 1**

IP1 
 Port1

**Call Manager 2**

IP2 
 Port2

**TFTP**

TFTP Server IP 
☐ Enable

**Volume (0-8)**

Playback 
 Record

**Password**

New Password 
 Confirm New Password

Save to EEPROM and Reboot

*Figure 9 IPH-90 Web Configuration (2)*

(1) Network Parameters

Network parameters store your network environment information, such as the IP address, DHCP, and DNS service. You may choose between DHCP and Static IP. If Static IP is chosen, you have to provide the following values: My IP, Gateway IP, and Subnet Mask.

(2) Call Manager 1, Call Manager 2

This section stores the IP address and the Port of the MGCP call manager.

(3) TFTP

In this section, enter the TFTP Server IP address for firmware upgrades.

(4) Volume (0-8)

Change the Playback and Record volume here.

(5) Password

You may change the Web login password here.

Click the “Save to EEPROM and Reboot” button after you have made the desired changes on the second IPH-90 Web Configuration window.

# 4

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## *Using the IP Phone*

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### **Making an Internet Call**

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1. Lift the handset or press the HD button to receive a dial tone.
2. Upon hearing a dial tone, dial the destination phone number. Wait for the person to answer, and then begin speaking.

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### **Receiving a Call**

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The DPH-90 is able to receive both Internet calls and PSTN calls. Receiving any type of incoming call is now as easy as lifting up the handset. When you have finished the call, simply hang up the phone, and the dialing mode would revert back to the one you have previously designated.

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**5**

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## ***Additional Telephone Features***

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### **Flash**

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1. Instead of momentarily depressing the switch hook, press the Flash button to activate features such as Call Waiting.
2. You may need to press other buttons before or after Flash depending on the custom calling instructions issued by your local telephone company. Flash is only used as a substitute for pressing the switch hook.

---

### **Redial**

---

1. The IP Phone “remembers” the last phone number dialed. Up to 24 digits are held in memory until you dial another number.
2. To dial the same number again, lift the handset or press the HD (Hands-Free Dialing) button, listen for dial tone, and then press the Redial button.

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### **Hold**

---

1. The IP Phone allows you to place your phone conversation on hold by pressing the Hold button. The Hold button is not compatible with other features such as Flash and IP/PSTN mode alternation.
2. To resume your phone conversation, simply press the Hold button a second time.

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### **Hands-Free Dialing (HD)**

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1. The HD button is yet another vehicle for convenience. Pressing the HD button allows you to dial without having to remove the handset from the base unit.
2. To take advantage of the hands-free dialing feature, first press the HD button to induce dial tone.
3. Next, enter the destination phone/fax number via the dial pad.
4. Once someone answers, pick up the handset and begin speaking.

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### **Operating Limitations**

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1. The voice communication quality of the IP Phone will be affected by Internet traffic and activities. Since some ISPs “overbook” their bandwidth, you should choose your ISP carefully. “Overbooking” can cause extra delays in sending and receiving voice data.
2. At certain times of the day, the Internet experiences higher traffic loads, which may also affect voice quality.
3. If the voice quality over the Internet is not clear, hang up and try calling again later.

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# **Specifications**

## **Call Control Protocols Compliant:**

MGCP

## **Internet Protocols Compliant:**

TCP/IP, UDP, ARP, TFTP, ICMP, Telnet, HTTP

## **Available Audio Compression**

G.723.1

## **Analog voice ports:**

Number of ports: 1

## **Signal Format: DTMF**

Echo Cancellation: G.165

DTMF tone detection/generation

## **IEEE 802.3 10BASE-T Ethernet compliant**

### **LEDs**

#### **IP**

IP Phone

#### **PHONE**

Standard Phone

#### **LINK**

Ethernet Link

#### **PWR**

Power

### **Dimensions**

216 mm (W) x 155.5 mm (D) x 60 mm (H)

### **Number of Ports**

One RJ-45 port

Two RJ-11 ports

One RS-232C port

### **Power Supply**

AC-to-AC power adapter (provided)

AC Input: 9VAC/1000mA

### **Operating Temperature**

5°C - 40°C (40° F- 104°F)

**Storage Temperature**

-10 - 70 °C

**Humidity**

5% - 95% non-condensing

**B**

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**Glossary****Always-on**

The term refers to a Wide Area Network connector that is online and connected to the ISP 24 hours a day. Nothing has to be turned on or dialed up in order to use the system. DSL and cable modems are examples of always-on technologies.

**Analog**

Analog signal is a signal that is continuous in nature rather than pulsed or discrete. An example of an analog signal is the sound wave, which is quantified by its frequency and amplitude.

**Bandwidth**

Bandwidth represents a communications channel's capacity. It is measured in terms of bits per second, bytes (8 bits) per second, and Hertz (cycles per second).

**Client**

A client program is one who requests information from server programs.

**Client/Server Model**

The model depicts a relationship between two computer programs in which one program, the client, makes a service request from another program called the server that fulfills the request.

**Compression**

It is a technique used to reduce the size of data to save space and/or transmission time.

**Delay**

The term delay, or latency, is used in the context of data transmission. It can be thought of as the minimum amount of time it takes for a bit or a byte of data to travel across a network.

**DHCP**

DHCP (Dynamic Host Configuration Protocol) is a protocol, or method, that allows network administrators to automate the assignment of Internet Protocol (IP) addresses in an organization's network. DHCP also permits network administrators to manage the IP addresses centrally.

**Digital**

The term "digital" describes an electronic technology that generates, stores, and processes data in terms of two states: positive and non-positive. The positive state is expressed or represented by the number 1, and non-positive is expressed by the number 0. Data transmitted or stored using the digital technology is conveyed by strings of 0's and 1's. Each unit of state representation within a string is referred to as a "bit."

**DTMF**

DTMF, or Dual Tone Multi-Frequency, is the signal to the phone that you generate when you press an ordinary telephone's touch keys to make a call.

**Dynamic IP address**

It is an IP (Internet Protocol) address that is automatically assigned by a DHCP (Dynamic Host Configuration Protocol) server to a client station (or computer) residing within a TCP/IP network.

**Ethernet**

Ethernet is the most widely installed local area network technology. It is defined by the IEEE 802.3 standard. An Ethernet local area network usually uses coaxial cables or special grades of twisted pair wires.

**Internet**

The Internet is a worldwide system of computer networks; it is a network of networks in which a user at any computer can, if he/she has permission, attain information from any other computer.

**Internet Telephony**

It is the two-way transmission of audio over the Internet.

**IP address**

It is a 32-bit address assigned to each host, or computer, that participates in the TCP/IP Internet. IP addresses are vital elements of data transmission.

**ISP**

The acronym stands for Internet Service Provider. An ISP is an organization that provides access to the Internet.

**LAN**

LAN stands for Local Area Network. A LAN consists of a group of computers and associated devices that share a common communications line. Computers in a LAN typically share the resources of a single processor or server. A LAN is confined to a small geographic area, such as an office building.

**LED**

LED (Light Emitting Diode) is a semiconductor device that emits visible light when an electric current passes through it. LEDs can be used as Indicator lights; they are also used in fiber optic data transmission and remote control.

**MGCP**

MGCP (Media Gateway Control Protocol) is a lightweight device control protocol for media gateways defined in IETF RFC 2705.

**Network**

A network consists of devices interconnected by communication paths. Networks themselves can interconnect and contain sub-networks.

**Off-hook**

It is the state of a telephone line that allows dialing and transmission but prohibits incoming calls from being answered.

**On-hook**

It is the state of a telephone line that permits the reception of an incoming call.

**Overbooking**

Overbooking occurs when Internet Service Providers oversell their bandwidth.

**Packet**

It refers the unit of data that is routed between an origin and a destination on the Internet or any other packet-switched network.

**Packet Loss**

It refers to the act of discarding individual packets during the process of data transmission. Packet loss typically occurs under the circumstance of network congestion.

### **PBX**

PBX, or Private Branch Exchange, is a telephone system within an enterprise that switches calls between enterprise users while allowing the users to share a certain number of external phone lines. The main benefit of the PBX is its cost effectiveness.

### **PIN**

PIN, or Personal Identification Number, is a password used for identification purposes. The term came from the banking industry.

### **Port**

A port is generally a specific place from which a device can be physically connected to another device. It usually manifests in the form of a socket or a jack.

### **Prepend Code**

It is the digit(s) that a person whose telephone is behind a PBX (Private Branch Exchange) must enter to attain access to an external or outside line. Also called Outside Line Access Code.

### **Protocol**

It denotes the special set of rules for communicating that the end points in a telecommunication connection use when they send signals back and forth.

### **PSTN**

The PSTN (Public Switched Telephone Network) refers to the world's collection of interlinked, voice-oriented public telephone networks. The telephone networks can either be commercial or government owned.

### **RJ-11**

RJ-11 (Register Jack – 11), is a telephone cable that holds up to four wires. It is used to plug the handset into the telephone and to connect the telephone to the wall.

### **RJ-45**

RJ-45, or Register Jack – 45, is a cable that holds up to eight wires. It is used to connect Ethernet devices.

### **Serial Port**

It is a socket on the computer used to connect a modem, a mouse, a scanner, or other compatible devices. The serial port supports sequential, one-bit-at-a-time transmission to and from peripheral devices.

### **Server**

It is a program that awaits and fulfills requests made by client programs in the same computer or in other computers.

### **Sound Card**

It is a personal computer expansion board that records and plays back sound. It receives inputs from a microphone or other sound sources and outputs the received sound to speakers or to an external amplifier.

### **Static IP address**

It is a permanent IP (Internet Protocol) address that is assigned to a computer in a TCP/IP network.

### **Switch Hook**

The switch hook is a button on the telephone set that is depressed to serve two purposes. The first purpose is to signal to the telephone network that the telephone set is ready to make a phone call. The second purpose is to disconnect or end a phone call.

### **TCP/IP**

They are protocols employed by the Internet. TCP (Transmission Control Protocol) facilitates the segmentation of data into packets. It also ensures the prompt re-assemblage of data packets. IP (Internet Protocol) handles the “addressing” of data packets and makes sure that the data packets are sent to the correct destinations.

### **Telecommunications**

It is the communication of data (text, image, voice, and video) information over a distance.

### **10BASE-T**

It is the most commonly installed Ethernet system. It allows for transmission speed of up to 10 Mega bits per second. It uses unshielded twisted pair wires that Category 3 or higher. 10BASE-T is widely used because it is affordable and flexible.

### **WAN**

It stands for Wide Area Network. It is a data communications network that covers a wide geographic area, such as a state or a country.